Learning Guide 6/7 Test B – **Answer Key**

Multiple Choice

1) B
2) C
3) C
4) D
5) B
6) C
7) C
8) D
9) D
10) D
11) D

Completion

1) Y = 5 (x + 14) (x + 2)

2) two

3) $1.25x^2 - 1.25x - 15$ or $\frac{5}{4}x^2 - \frac{5}{4}x - 15$

Learning Guide 6/7 Test B

1) Describe the situations in which the graph of a quadratic equation will have one solution, no solution and two solutions.

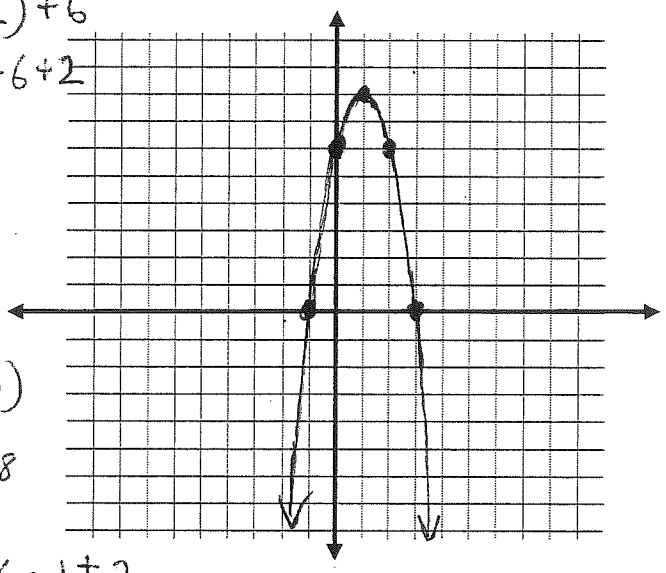
No solution- the parabola does not touch the x axis. (vertex above x axis and going up or below and going down)

One solution- the parabola touches the x axis at the vertex only.

Two solutions- the parabola crosses the x axis at 2 places.

2) Using the coordinate grid below, graph the solutions of the quadratic equation.

$y = -2x^2 + 4x + 6$



$y = -2(x^2 - 2x + \_\_) + 6$

$y = -2(x^2 - 2x + 1) + 6 + 2$

$y = -2(x-1)^2 + 8$

vertex = $(1, 8)$

y int = $(0, 6)$

x int = $(3, 0)$ $(-1, 0)$

$0 = -2(x-1)^2 + 8$

$4 = (x-1)^2$

$\pm 2 = x - 1$ $\quad x = 1 \pm 2$

3) Use the method of factoring to determine the roots of the following quadratic equation. State answers as exact values.

$y = -3x^2 + 11x + 4$

Find 2 numbers which multiply = -12, add = 11

12, -1

$y = -3x^2 - 12x + 1x + 4$

$y = -1x(3x+1) + 4(3x+1)$

$y = (-1x + 4)(3x + 1)$

$-1x + 4 = 0$ $\quad -1x = -4$ $\quad x = 4$

$3x + 1 = 0$ $\quad 3x = -1$ $\quad x = -\frac{1}{3}$

4) Use the quadratic formula to determine the zeros of the following quadratic function. State answers as exact values.

$y = 3x^2 - 7x - 4$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{7 \pm \sqrt{(-7)^2 - 4(3)(-4)}}{2(3)} = \frac{7 \pm \sqrt{49 + 48}}{6}$

$= \boxed{\frac{7 \pm \sqrt{97}}{6}}$

5) Determine the value of the descriminant, and the nature of the roots for the following quadratic equation.

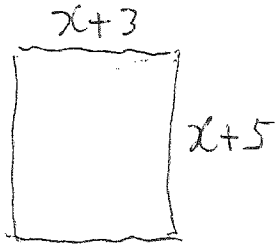
$y = -4x^2 + 12x - 9$

$b^2 - 4ac = 12^2 - 4(-4)(-9)$

$= 144 - 144$

$= 0 \longrightarrow$ One real root.

6) Ashlyn's rectangular, walk-in closet measures 3 by 5 feet. She won the lottery and went on a shopping spree. As a result she wants to triple the area of her closet by increasing the length and width of the closet by the same amount. What is the new length and width of her closet? (Sketch a diagram if needed) Round answers to the nearest tenth of a foot.



Length: 7.8 ft. Width: 5.8 ft.

$A = L \times W$

Original area $= 3' \times 5' = 15\ ft^2$

New area $= 3 \times 15 ft^2 = 45\ ft^2$

$(x+3)(x+5) = 45$

$x^2 + 8x + 15 = 45$

$x^2 + 8x - 30 = 0$

$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$x = \frac{-8 \pm \sqrt{8^2 - 4(1)(-30)}}{2}$

$x = \frac{-8 \pm \sqrt{184}}{2}$

$x = \frac{-4 \pm 2\sqrt{46}}{2}$

$x = -4 \pm \sqrt{46}$

~~$x = -10.8$~~ or $x = 2.8$

Length $= 2.8 + 5$
$= 7.8$

width $= 2.8 + 3$
$= 5.8$